

PATENT
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U.S. Serial No. 10/821,326

In the Specification

Please replace paragraphs [0015], [0023], [0026], [0033], [0046] and [0047] of the specification with the following paragraphs:

[0015] In one embodiment, the preferred metal for wood preserving type applications is copper in the form of a copper compound having a particle size 0.0010-0.005 microns to 25.0 microns. The copper compound can optionally be mixed with a variety of water soluble and/or water insoluble biocides and then vacuum impregnated, vacuum/pressure or dip impregnated into cellulosic material by standard methods to effectively preserve the material from agents that degrade cellulosic material such as fungi, insects, bacteria etc.

[0023] Unless stated otherwise, such as in the examples, all amounts and numbers used in this specification are intended to be interpreted as modified by the term "about". Likewise, all elements or compounds identified in this specification, unless stated otherwise, are intended to be non-limiting and representative of other elements or compounds generally considered by those skilled in the art as being within the same family of elements or compounds. The term "micronized" as used herein means a particle size in the range of 0.0010-0.005 to 25 microns. The term "preservative" as used herein means a composition that renders the material to which it is applied more resistant to insect, fungal and microbial attack than the same material without having the composition applied. The term "particle size" refers to the largest axis of the particle, and in the case of a generally spherical particle, the largest axis is the diameter.

[0026] A preferred metal is copper. Accordingly, in one embodiment, copper or copper compounds are used. The copper or copper compounds such as cuprous oxide (a source of copper (I) ions), cupric oxide (a source of copper (II) ions), copper hydroxide, copper carbonate, basic copper carbonate, copper oxychloride, copper 8-hydroxyquinolate, copper dimethyldithiocarbamate, copper omadine, copper borate, copper residues (copper metal

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byproducts) or any suitable copper source can be used as micronized particles having a particle size between 0.0010-0.005 microns to 25 microns. These particles exhibit a relatively low solubility in water.

[0033] The insoluble biocides can be micronized into particles of submicron size ranging from 0.0010-0.005 micrometers to 25 micrometers using a grinding mill. The particles are dispersed in standard dispersants such as acrylic copolymers, aqueous solution of copolymers with pigment affinity groups, modified polyacrylate, acrylic polymer emulsions, modified lignin and the like.

[0046] Particle size of the metal, metal compounds or organic biocide used in the dispersion formulation disclosed herein typically does not exceed 30 microns or the metal and or organic biocide used in conjunction with the metal tends to be filtered by the surface of the wood thus not attaining a desired penetration and fluid flow through the wood tissue. In one embodiment particle size of the micronized particles used in the dispersion formulation disclosed herein can be between 0.0010-0.005-10 microns. In another embodiment, the particle size is between 0.005 to 1.0 micron. In another embodiment, the particle size is between 0.05 to 10.0 microns. If a more uniform penetration is desired, particle size of the metal/metal compounds or the organic biocide used in the dispersion formulation disclosed herein can be between 0.05-1.0 microns.

[0047] The present invention also provides a method for preservation of wood. In one embodiment, the method comprises the steps of treating wood with a composition (treating fluid) comprising a dispersion of water insoluble micronized metal and/or metal compounds. In another embodiment, wood is treated with a composition comprising a dispersion of micronized metal and/or metal compounds and organic biocides, wherein the organic biocides are soluble or present as water insoluble micronized particles. The size of the micronized particles for the metal/metal compounds and organic biocide is between 0.0010-0.005-to 25 microns, preferably between 0.005 to 10 microns, more preferably between 0.05 to 10 micron and even more preferably between 0.05 to

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1.0 microns. In another embodiment, the wood is treated with a composition comprising soluble metal compounds and micronized organic biocides.